Title: Individual vs. Group-based Strategies for Weight Loss and Management in Adults: Pen Profile Perceptions

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Abstract

Aims

The aim of this study was to explore perceptions of barriers, facilitators, strategies and successes in individual vs. group-based weight management programmes.

Methods

Forty-two, overweight (Body Mass Index ≥ 25-kg·m^2) participants (aged 32-63y) volunteered to take part in this study. All participants completed a 3-month weight loss programme, randomised to a group-based (n=21), or self-monitoring only (n=21) approach, respectively. Participants subsequently participated in a semi-structured interview (60±7 mins) to explore individual and collective perceptions of barriers, facilitators, strategies and successes.

Results

Convergent themes were found for individual and group strategies for facilitators, strategies and successes. Divergent themes were found between groups for barriers, group participants highlighted expense of commercial products, and knowledge of nutrition and dieting, whilst individual participants reported (lack of) social support from peers, (lack of) motivation, and occupation.

Conclusion

Key stakeholders, facilitators, and individuals must consider these factors prior to the advocation any weight loss strategy.

Key words: Obesity; Overweight; Weight-loss; Management; Strategy

Introduction

Obesity, broadly speaking, is characterised by having a body-mass index above 30 $kg \cdot m^2$, and described as a non-communicable risk factor (Atay & Bereket, 2016). The proportion of adults in the United Kingdom (UK) that are overweight or obese has risen from 57.6% to 68% in men, and from 48.6% to 58% in women between 1993 and 2018; representing an estimated total economic burden of £27 billion (Clark, 2018). Indeed, obesity in the UK (and worldwide) is acknowledged as to be an epidemic (Clark, 2018); whilst physical activity has been identified as an integral contributor to a healthy lifestyle (Saunders et al, 2016) and can provide immediate and future health benefits (Telema et al, 2013; Shiri et al, 2013), physical inactivity is the largest contributor to risk factors for non-communicable diseases worldwide (WHO, 2010), exacerbating the prevalence of obesity. Strong relationships exist between physical activity and health, with higher physical activity levels leading to reduced risks of coronary heart disease (Li et al, 2012), hypertension (Peters et al, 2006), non-insulin dependent diabetes mellitus (LaMonte, Blair & Church, 2005), stroke (Goldstein, 2010), colon cancer (Wolin et al, 2009), osteoporotic fractures (de Kam et al, 2009) and depression (Martinsen, 2008). Notwithstanding, weight loss and maintenance is multi-factorial, and it has become increasingly apparent that nutrition, support and encouragement, among other facilitators, are pivotal tenets of any weight loss strategy.

The benefits of regular physical activity and a healthy lifestyle have been clearly set out across the life course (WHO, 2010). As such, it has become common practice to promote and encourage overweight and obese individuals towards weight loss strategies and groups, yet there remains no consensus on the most efficacious weight loss strategy. Weight loss or maintenance strategies can be broadly dichotomised into self-monitoring or group-based. Self-monitoring is a common, very easy method of weight loss. Originally, this method was observed using paper records of an individual's diet (Sperduto, Thompson and O'Brien, 1986). Such self-monitoring techniques have further expanded to include the addition of physical activity and how individuals pair both factors as a method of behaviour change to lose weight (Wadden, Butryn and Wilson, 2007). Additionally, self-monitoring in terms of self-weighing to track progress has also been

identified (Linde et al. 2005). The self-reliant nature of this strategy is asserted to make the individual more aware of their current behaviours; making goal setting easier, enabling them to track progress and then put a number to this progress with the weighing (Foster, Makris and Bailer, 2005).

Group-based interventions comprise an alternative to self-monitoring that is equally popular as a method of weight loss. For example, the commercially prevalent Weight Watchers (WW) or Slimming World (SW), which are often referrals from primary health care practitioners. These are commercial weight-loss programmes that individuals can sign up to of their own volition or are often referrals from primary health care practitioners (Jolly et al., 2007). Individuals sign up with this programme and attend sociable meetings to have a weigh in once a week; and are also able to purchase food, drinks and snacks sold by these companies all in aid of losing weight.

Empirical evidence has shown the structure and intensity of contact within a weight loss method are significantly correlated with success (Jensen *et al.*, 2013; Wadden *et al.*, 2011); however, inter-individual interpretation of such key terms is equivocal. Metzgar *et al.* (2014) reported that accountability and support, exercise, motivation, total lifestyle change and eating patterns majorly influenced weight loss maintenance. Additionally, Elfhag and Rossner (2005) identified factors associated with successful weight loss included; a high amount of initial weight loss, goal setting, physical activity, regular eating patterns and controlled eating habits. Furthermore, to enhance weight maintenance specifically Elfhag and Rossner (2005) asserted that individuals look for an internal motivation to lose weight, high self-efficacy, coping strategies, social support and strong psychological strength. To ensure this, they suggested that a weight loss method requires an appropriate amount of guidance and support to ensure weight maintenance, which is of high importance within the first three months.

Recently, Lemstra and colleagues (2016) observed that self-monitoring weight loss programs have lower adherence than group-based programmes, 41.5% vs. 68.6%, respectively. There are innumerable

tenets of a successful and sustained weight loss and management programme, yet inter-individual preferences and perceptions of weight-management strategies are less well known; where if such perceptions of weight-management strategies might be best elucidated via qualitative research methodology as it provides more in depth understanding of inter-individual factors that may predispose a weight management strategy to be more or less effective. Therefore, the aim of this study was to explore perceptions of barriers, facilitators, strategies and successes in individual versus group-based weight loss programmes.

Methods

Overview

This study drew on data collected via interviews conducted with forty-two overweight (Body Mass Index $\geq$ 25 kg.m^2) participants (aged 32-63 years) at the conclusion of a 3-month weight loss programme, randomised to a commercially prevalent group-based (n=21), or self-monitoring only (n=21) approach, respectively. The project received institutional ethical approval and conformed to the Declaration of Helsinki.

Participants and Settings

Forty-two overweight (Body Mass Index $\geq$ 25-kg·m^2) participants (aged 32-63y) volunteered to take part in this study. Following anamnesis questioning; all participants verbally confirmed no prior experience of formally taking part in a weight-loss plan, group, or strategy, so to avoid prior personal experiences influencing opinions and beliefs, *a priori*. Participants were randomized into either 3-months of self-monitoring weight-loss only, or a commercial weight-loss group.

Demographic information (age and sex) were collected via Web-based survey, completed during the first week of the study. At the conclusion of the 3-month period, all individuals participated in a semi-structured interview. A qualitative approach was used to respect the expert knowledge of the participants and to enable them to provide insights into their experiences (Ridgers et al, 2012). The interviews followed

a semi-structured format and were designed to address individual perceptions of barriers, facilitators, strategies and successes; related to respective weight loss strategies. In total, 42 semi-structured interviews (60±7 mins) were conducted in participants' home environment by two of the authors, and digitally recorded. Interviews were subsequently transcribed verbatim, resulting in 210 pages of raw transcription for further analyses.

Data Analyses

Pen profiles were constructed from verbatim transcripts using a manual protocol (see; Mackintosh et al, 2011; Ridgers et al, 2012). Pen profiles are an increasingly utilized technique that are used to present analysis outcomes via diagrams of composite key emergent themes, and is considered appropriate and accessible to researchers with an affinity for both qualitative and quantitative backgrounds. Example, representative, verbatim quotations were extracted directly from the transcripts to further contextualize the theme. To provide an indication of the prevalence of the themes, the number of times a specific theme was mentioned across all interview data is also presented (Ridgers et al, 2012). Consistent with recommended approaches (Burnard, 1991) one researcher (AC) initially read and analysed the transcripts. These findings were then presented to another researcher, by means of cooperative triangulation. Having independently analysed the transcripts, CC then critically questioned the presented thematic analyses and challenged differing interpretations. A third researcher (RP) subsequently analysed the data in reverse from the pen profiles back to the transcripts. This process assured the reliability of the data obtained (Ridgers et al, 2012). Finally, the pen profiles were re-presented to the lead author, who further critically challenged the data. This process allowed authors to offer alternative interpretations and interrogate the data until a consensus was reached. Overall, methodological rigor (i.e., credibility and transferability) was demonstrated through verbatim transcription of data and triangular consensus procedures. Moreover, dependability was demonstrated through the comparison of pen profiles with verbatim citations and the triangular consensus processes.

Results

Barriers to weight loss success

Perceptions of barriers to weight loss success were found to be divergent between strategies, where only time constraints was found as a shared theme. Expense of commercial products, and knowledge of nutrition and dieting were attributed to the group-based strategy. Less common barriers were weight maintenance, laziness, the influence of not liking cooking (Figure 1). Exemplar views around barriers include; "I wasn't bought up with the understanding of healthy food" (F32), and, "My eating pattern was very up and down because of my job" (M34). Within the self-monitoring approach, the themes identified were different to the group intervention participants. However, there were also two common barriers specific to the weight-loss method; lack of freedom self-monitoring provides, and a lack of social support from peers. Lesser referred to barriers identified were lack of motivation, the influence of the participants' occupation (Figure 1).

*****Figure 1 about here*****

Contributors to weight loss success

Convergent overarching themes were noted for individual and group strategies; including exercise, diet and personal factors. The group intervention participants identified enjoyment and improving health as successors to exercise (Figure 2). With respect to diet, reflection, organisation and prior dieting experience were considered to be important to success (Figure 2). Finally, the personal skills identified were increasing self-confidence, improving health, being self-motivated, mental state, making the appropriate changes and self-awareness (Figure 2). The self-monitors observed were improving health, enjoyment, meeting physique goals and the influence of their occupation to be important to successors to exercise (Figure 3). Convergent themes were established between the two groups, for diet: organisation, influence of cooking skills, conscious decision making and reflection; for personal factors: making appropriate changes, self-control,

mental state, the influence of their knowledge, time management, influence of their occupation and improving health; for exercise: health improvement, enjoyment and physique goals were reported (Figure 3). For instance, the self-monitoring group highlighted that their social support comes from friends and family, "Friends and family are support" (F 41), whilst the group intervention participants stated that their social support came from the group itself, for example "My support is in the group" (F 44).

***** Figure 2 about here *****

***** Figure 3 about here *****

Strategy choice influences

Views on strategy choice influences were convergent as overarching themes, where; freedom, enjoyment, ease, structure and consistent weight loss were evident. For example; "It's just so easy for me with the baby" (F34). For the group-based strategy, peer support, weekly schedule and guidance of improving knowledge were additionally found. Whilst, for the self-monitoring strategy, social support from friends was additionally referred to (Figure 4).

***** Figure 4 about here *****

Discussion

The aim of this study was to explore perceptions of barriers, facilitators, strategies and successes in individual only vs. group-based weight management programmes. In accord with our aim, divergent themes were found between groups for barriers, whilst convergent overarching themes were noted for individual and group strategies for facilitators, strategies and successes; including exercise, diet and personal factors. The data presented here offer unique insight into the facets of individual or group-based weight loss

strategies which may predispose individuals to be more or less successful when undertaking a weight loss programme. Such information has yet to be provided by prior work and, as such, the research presented here extends knowledge in the area/constitutes a novel addition to the area. The following topics will be discussed as result of the themes found; strategy choice influences, the importance of social support, maintenance of motivation, organisation, contributors to weight-loss success, guidance, personal factors, exercise, diet, barriers to weight-loss success, lifestyle and personal factors, and, disadvantages of weight-loss methods.

Strategy choice influences

The importance of social support

Social support was deemed to be an important factor for both weight management programmes, concomitant with previous research, which highlights social support to be a key positive factor contributing adherence (Lemstra et al. 2016). Whilst comparable, in an overarching view, the present work suggests that the two groups found social support from different places. Karfopoulou et al. (2016) asserts that although social support is important, the type of support received can affect weight maintenance. That is, when comparing individuals who had lost or maintained weight for a year to those who re-gained it, those who maintained weight loss had received compliments, in comparison to the re-gainers, who had received verbal instructions. This highlights that the support from peers needs to be positive for the individual to maintain motivation. This could explain why the self-monitors sought social support within a weight loss method, given it is not as readily available compared to group intervention.

Maintenance of motivation

Other factors relating to maintaining motivation were found through the thematic analyses, where both the groups acknowledged that a pattern of constant weight loss each week will keep them motivated. Participants also highlighted their goals in terms of numbers i.e. the importance of monitoring their weight, to succeed. This could suggest that if the individuals had stopped achieving this weekly weight goal they may have given up, albeit this does require follow-up work to substantiate. Both self-monitoring and group

interventions facilitate participants to track this progress by integrating a weekly weighing/tracking progress system; although there is a dearth of empirical evidence that specifically identifies this as a mechanism to motivation maintenance, there is evidence for the underlying principles. For example, Elfhag and Rossner (2005) support the concept of meeting weight loss goals to be important to participants alongside identifying that individuals who have a high initial weight loss are more likely to maintain their weight lost. Whilst Wing and Hill (2001) assert that regular self-monitoring of weight is crucial for weight maintenance, inferring that if individuals are to choose a weight loss method that incorporates tracking, they are more likely to maintain their weight; however, how this system is operationalized is somewhat unequivocal.

Within the present study, the participants from both groups also conveyed that the weight loss method they choose needs to provide enjoyment, freedom and ease for them. It is plausible, from the themes highlighted in this study, that participants seek these from a weight loss method to maintain motivation. The ease of a weight loss method is crucial, because if it is complicated, or too restrictive and difficult to fit in to an individuals' lifestyle, it is not conducive to programme maintenance or adherence. Classic empirical evidence, from Schifter and Ajzen (1985), highlights that idiosyncratic preferences of freedom must be evident, thereby facilitating enjoyment; without such affordances, motivation will be deleteriously affected.

Organisation

A further theme identified from both groups constituted the need for a structured eating pattern. This highlights the importance of self-organisation, which has previously been deemed an important factor to weight loss success (Elfhag and Rossner, 2005; Kruger, Blanck and Gillespie, 2006). Many of the participants highlighted how their meal patterns had changed due to the weight loss method they had adopted. One practical difference between the two groups is that the group intervention, integrated this structured eating pattern approach from their teachings, for example, using a points-based system (as in Weight Watchers) to control their intake. Conversely, those that self-monitor are required to organise their eating patterns for themselves.

Guidance

Within this study, the group intervention participants identified an additional need within their weight loss method, compared to the self-monitors. That is, they highlighted the importance of the organisation of the point-based systems enabling them to control eating habits, in conjunction with the knowledge the leaders or facilitators impart and the provision of educational materials, for example the booklets and recipes. To the authors' knowledge, there exists no research to definitively support that the aforementioned are common influences as to why individuals choose a group-based weight loss intervention. However, within this research, 'guidance' is the difference that dichotomizes the two groups. Notwithstanding, it was evident that self-monitors look for the same core principles within a weight loss method, they are happy volitionally organising their behaviour changes compared to group intervention participants whom seek extra guidance to make appropriate changes.

Contributors to weight loss success

Personal factors

There are innumerable personality traits and qualities that could influence an individual's likelihood to succeed with weight loss (Montesi et al., 2015), however, within this work, both groups identified similar qualities they deemed important in relation to their weight loss success. Firstly, both groups identified the need to make appropriate changes; whether this be to diet or exercise. Self-control was also identified as an important aspect alongside needing a strong mental state. Finally, both groups identified the importance of improving health, suggesting that if and individual feels intrinsically better, they can see the positive impacts of the weight loss, thereby facilitating increased motivation; a finding which has been affirmed previously (Metzgar et al. 2014). Both groups in the present study also identified other personal factors, albeit in smaller numbers, suggesting the importance of assessing idiosyncratic traits preceding recommendation of a weight loss strategy.

Exercise

The importance of exercise has repeatedly been highlighted for positive health trajectories, whilst concomitantly being an effective strategy for weight loss; where it is frequently shown to be a predictor of success in long term healthy weight management (Donnelly et al. 2004; Haus et al. 1994; Ross et al. 2000; Lejeune et al. 2003; Kahkoska et al. 2018). Empirical evidence is equivocal as to the veracity of diet versus exercise for weight-loss or maintenance, given they are *two-sides of the same coin*, but increased effectiveness of using both in combination is globally advocated. In a comprehensive meta-analysis, Anderson et al. (2001) investigated long-term weight maintenance of participants within structured weight-loss programmes; six constituent studies concluded that participants who exercised more frequently, had a significantly greater weight-loss maintenance compared to those who exercised less. Additionally, Wu et al. (2009) showed that whilst lifestyle interventions with a dietary component result in weight loss, interventions combining a dietary and physical activity component result in a greater magnitude of weight loss.

Irrespective of weight-loss strategy, those participants engaging in physical activity reported homogenous themes, highlighting the importance of improving health. Concurrently, participants stated they enjoyed the forms of exercise they did. Previous research demonstrates adherence rates in exercise to be increased synchronously with enjoyment (Ryan et al. 1997; Hagberg et al. 2008). There was a range of physical activities reported, from aqua aerobics, yoga and horse riding to gym-going. Evidently, numerous forms of exercise appeal to various individuals, suggesting that a symbiotic relationship between weight loss interventions and proximity to facilities that enable physical activity (e.g. sports and leisure centres) may be conducive to physical activity engagement; notwithstanding, this is conjecture and necessitates further investigation. In addition, many self-monitors highlighted that they perceived themselves as having active jobs, which influenced their decision to exercise or not. Whilst many self-monitors highlight specific physique goals they wanted to meet in addition to losing weight, such as increasing musculature.

Diet

Diet, concomitant to energy balance, has a major influence on an individuals' weight, thus playing a key role in weight loss (Bish et al. 2005; Kruger et al. 2004), concomitant to physical activity (referred to above). Both groups identified the importance of organisation and reflection to their weight loss journey. There is currently limited empirical data exonerating the concept of self-reflection within weight loss specifically. However, the concept of self-reflection has been asserted an important skill, which enables an individual to critically look at what they are doing and make appropriate changes (Baird *et al.* 1991), and by extension within weight-loss.

A stark contrast between the weight loss groups was that the self-monitors identified their cooking skills as a positive influence. Whilst the group intervention participants highlighted this as a barrier. Kruger and colleagues (2006) also reported on the importance of organization and meal planning, alongside the positive influence of liking cooking, as factors relating to successful weight maintenance. This may reveal a tenet for improvement in group-based strategies, notwithstanding, cooking preference/ability should be investigated as a potential correlate or determinant of successful weight loss and maintenance.

Barriers to weight loss success

Barriers are an acknowledgedly important aspect to consider for potential weight loss; whilst there are factors individuals cannot control, for example developmental determinants, age and sex, many other, controllable or changeable, environmental and social factors can heavily influence weight loss and maintenance, ultimately becoming barriers to success (Weight Management, 2003). Both weight loss groups identified a range of barriers to weight loss success, however, there were few similarities noted between the two groups.

Lifestyle and personal factors

Both groups identified time as a perceived barrier, for example, in response to questions referring to preparation of food and participating in exercise. In particular, the self-monitors also stated that their

occupation was a major time barrier for exercise participation. Much empirical data exists in support of the current findings (that time was a major barrier), particularly with reference to exercise (Trost et al. 2002; Andajani-Sutjahjo et al. 2004). Welch et al. (2008) found that 40% of 1,580 women stated time is a barrier to achieving dietary goals, and 70% of 1,521 women asserted time as a barrier to achieving physical activity goals.

Intrinsic motivation is very common theme across weight loss research, where self-motivation paired with an internal motivation to lose weight have been identified as predictors of weight loss success (Elfhag and Rossner, 2005; Teixeira et al. 2005). Within the present study, self-monitors identified (lack of) intrinsic motivation as a barrier with much greater prevalence than the group intervention, in fact, among group intervention participants, this was not found as a universal theme. Given the lack of motivation experienced by only one intervention in the present study, further investigations into this phenomenon should be encouraged.

In the current study, the group intervention participants asserted weight maintenance as an importance aspect. Highlighting the importance of sustained weight loss or management, and linked to a further perceived barrier, mental state, which, in a likely cyclical relationship, is exacerbated by reverting towards starting weight. This relationship warrants deeper investigation to facilitate our understanding of mental state and weight management.

Disadvantages of weight loss methods

Due to the self-monitoring participants having greater perceived control over their approach/strategy to weight loss, the barriers they identified were generally not related to the weight loss method itself, rather the inverse, the abundant freedom was perceived as a potential drawback, whilst paradoxically positively influencing their choice of strategy. This paradox demonstrates the intricacies of individual weight loss

method selection, opposed to a one size fits all approach. Freedom within a weight loss method might facilitate the participant's control over their physical activity regime, food portions and calorie restrictions. Whilst these are fundamental tenets of any weight loss programme, it likely necessitates self-control and understanding (Klem *et al.* 1997; Leahey *et al.* 2014). Conversely, the group intervention participants did not identify freedom as a barrier, only a strategy choice influence, inferring that the group-based sessions provide adequate education and support to facilitate better understanding and self-control in their participants. The group intervention participants highlighted two barriers to success relating to their method choice. Firstly, the expense of the commercial group products, and, secondly, prior knowledge of nutrition and dieting. Klohe-Lehman *et al.* (2006) support the importance of knowledge for weight loss success, highlighting that the amount of weight the participants lost after the intervention, significantly, positively correlated with the amount of knowledge they gained, albeit subjectively ascertained, this suggests that greater [perception of] knowledge, is associated with greater weight loss success.

Limitations

This study evaluated participants views in response to 3-months following a weight loss programme, however, given the importance of weight management, in addition to weight loss, a longer follow up period could be implemented to assess the changing views, as an individuals' weight loss journey continues. The interventions employed in this study were 3-months in duration, however, were a longer intervention implemented, participant views may have differed, and as such, should be considered in further research. Of importance is that this study did not distinguish between those who were successful or unsuccessful on their weight loss programme; but assert the information gleaned from this work are equally as important on ones' weight-loss or maintenance journey, where 3-months is only the beginning. We therefore recommend that a comprehensive, longitudinal investigation of perceptions and actual weight loss be conducted. Finally, the participants represented quite a broad age range, it would be advantageous to explore age specific groups to investigate the intricacies of how views related to weight loss evolve with age.

Conclusion

Whilst facilitators, strategies and successes related to individual only vs group weight-loss approaches were comparable between groups, divergent perceived barriers were found, highlighting that there is not one panacea strategy for weight loss or management. Therefore, it is recommended that key stakeholders, facilitators and individuals must consider these factors prior to the advocation of any one-particular weight loss strategy, and use individual/patient experience to facilitate the abatement of perceived barriers.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request

Conflicts of Interest

The authors do hereby declare that they have no conflicts of interest relevant to the content of this manuscript.

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Figure captions

FIGURE 1. Barriers to weight loss success for group and individual strategies

FIGURE 2. Contributors to weight loss for group strategies

FIGURE 3. Contributors to weight loss success for individual strategies

FIGURE 4**.** Strategy choice influences for group and individual weight loss

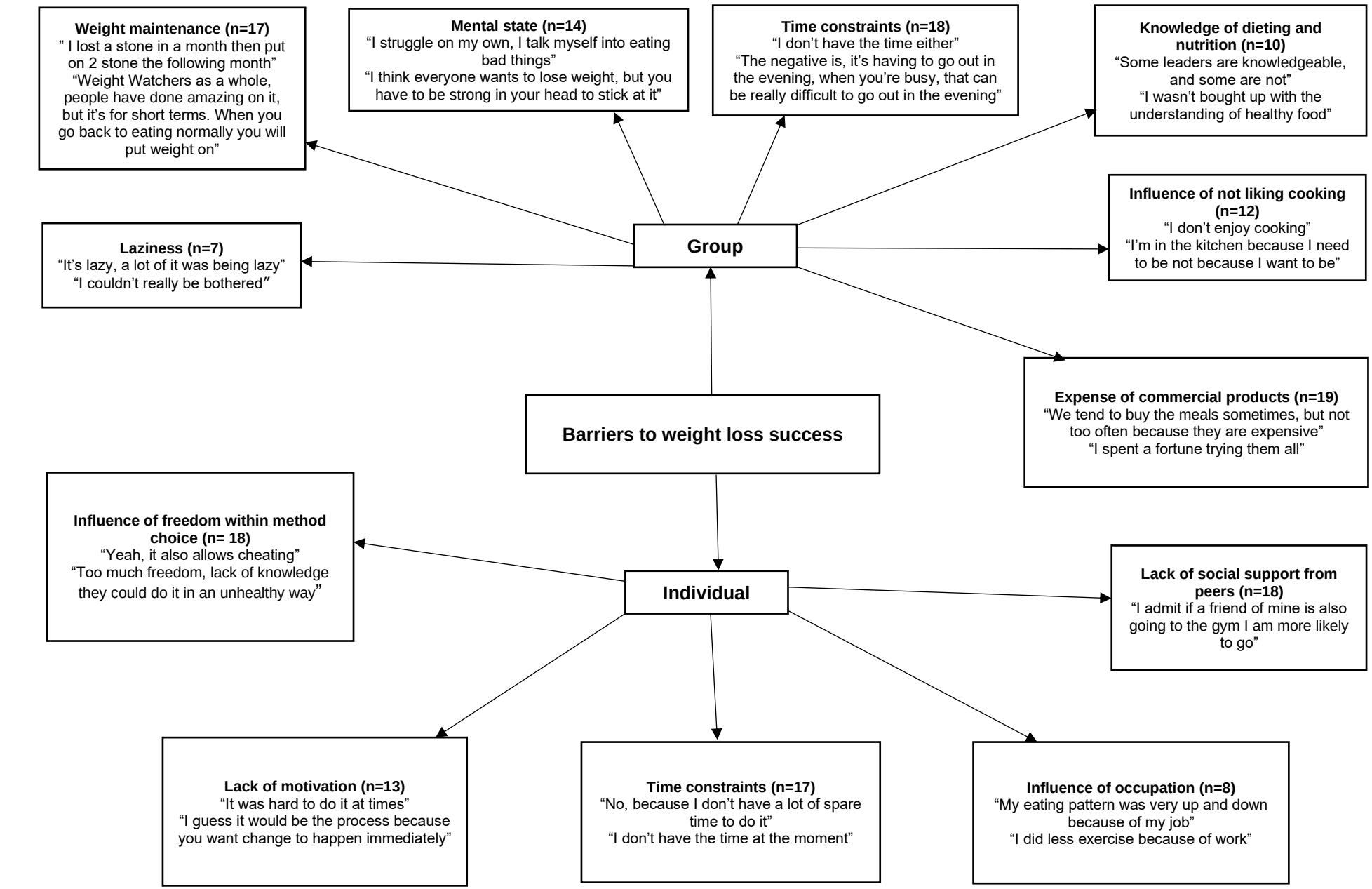


FIGURE 1. **Barriers to weight loss success for group and individual strategies**

FIGURE 2.
Contributors to weight loss for group strategies

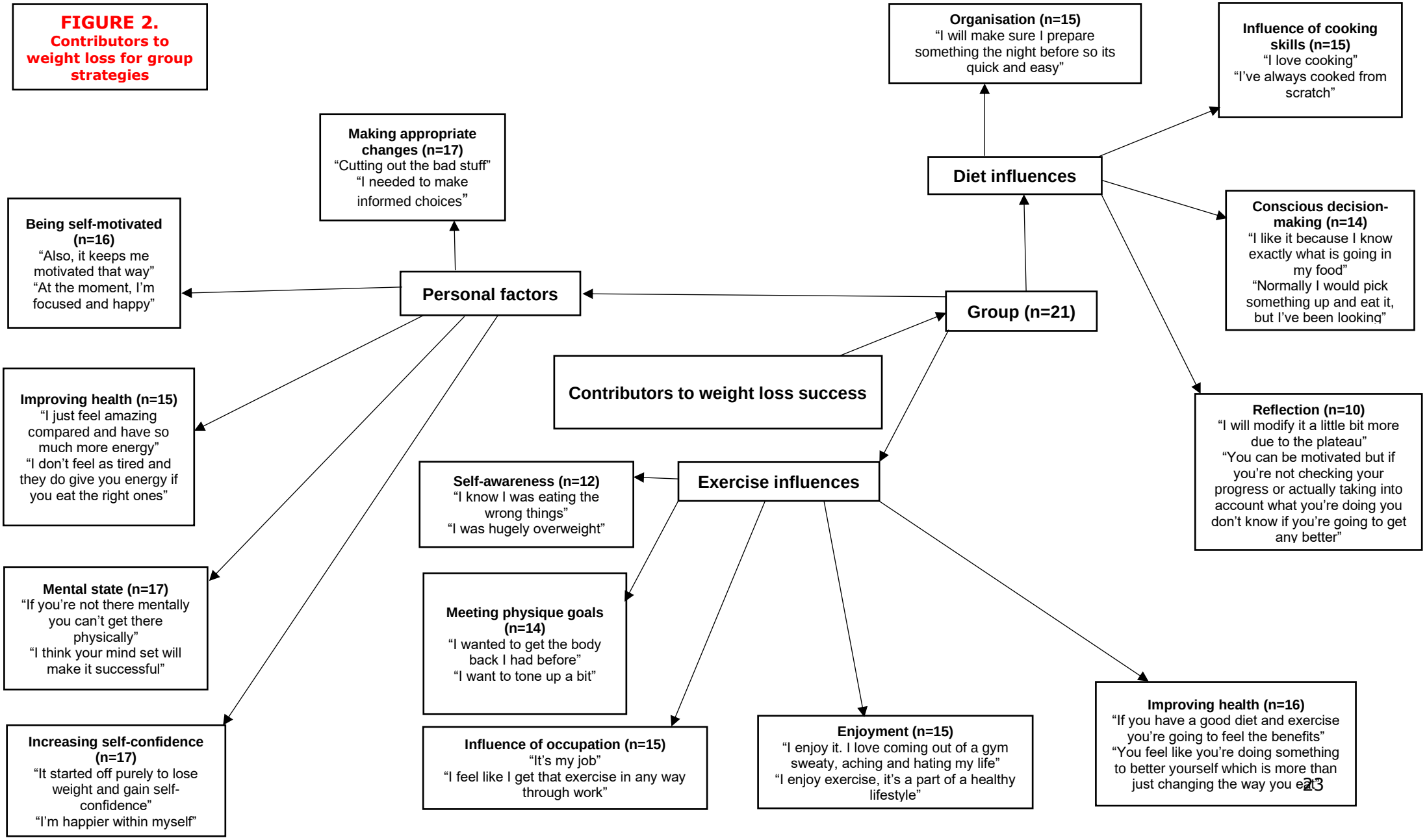
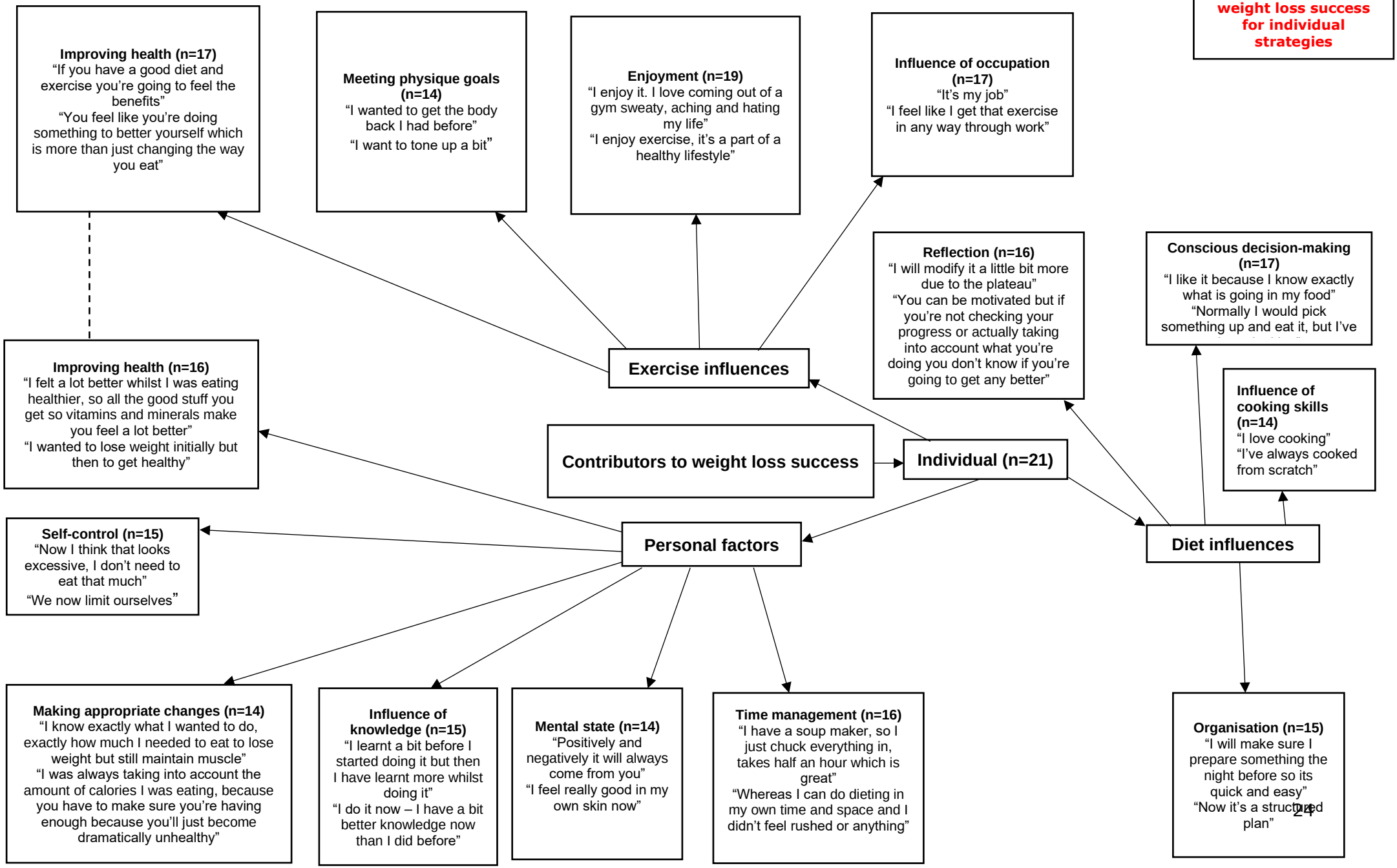
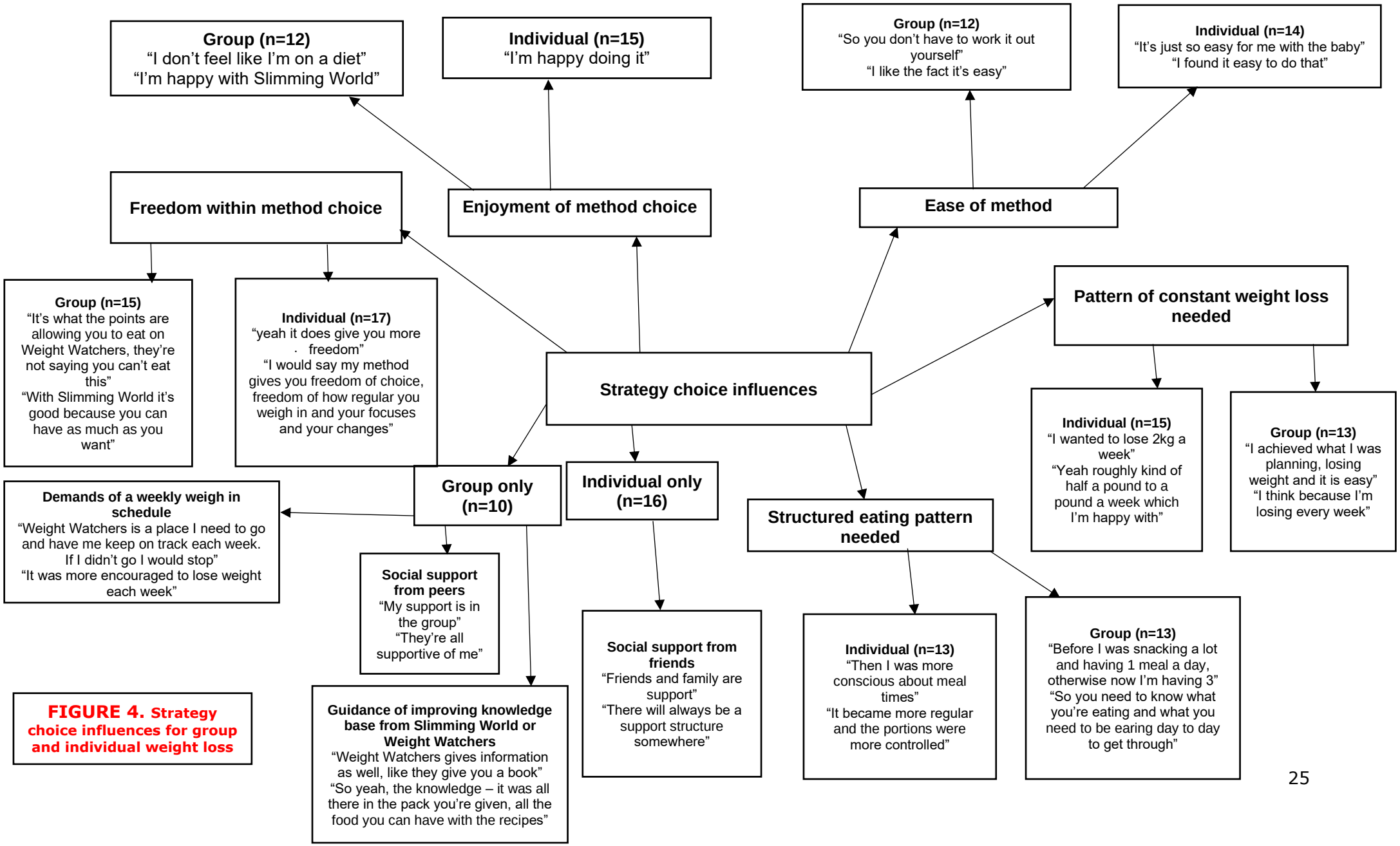


FIGURE 3.
Contributors to weight loss success for individual strategies





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